

A Compact, Wide Area Surveillance 3D Imaging LIDAR Providing UAS Sense and Avoid Capabilities, Phase I

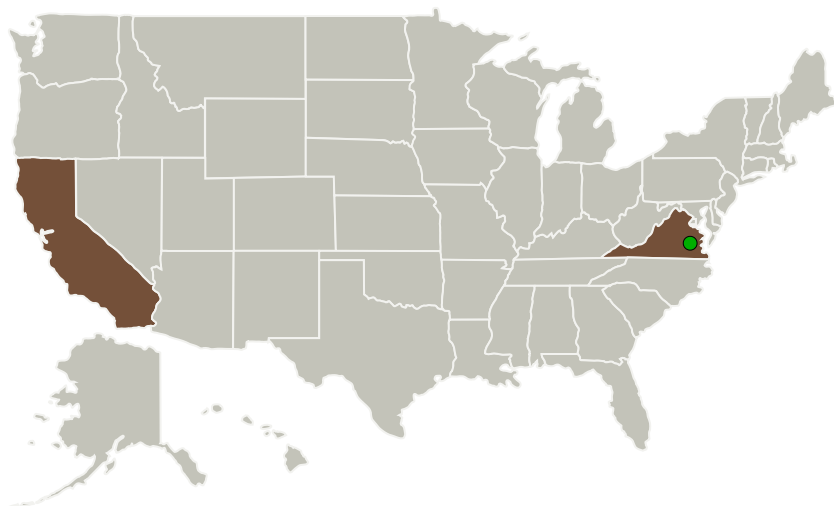
Completed Technology Project (2014 - 2014)



Project Introduction

Eye safe 3D Imaging LIDARS when combined with advanced very high sensitivity, large format receivers can provide a robust wide area search capability in a very compact package. This search LIDAR concept, when deployed on UAS, can provide target detection, tracking and identification of sufficient quality to enable search and avoid actions when other air traffic flies near UAS platforms in the National Air Space. Current fiber laser technology, operating at a 1.5 micron wavelength, has sufficient pulse energy and pulse rates to illuminate large areas around the UAS platform. The relatively low energy per pulse of the fiber laser is compensated by a new development in large format , compact receivers (2,000 x 32 or 1000 x 1000) which exhibit near photon counting capability in very small pixels (~ 15 microns).

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Irvine Sensors Corporation	Lead Organization	Industry	Costa Mesa, California
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



A Compact, Wide Area Surveillance 3D Imaging LIDAR Providing UAS Sense and Avoid Capabilities, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

A Compact, Wide Area Surveillance 3D Imaging LIDAR Providing UAS Sense and Avoid Capabilities, Phase I

Completed Technology Project (2014 - 2014)



Primary U.S. Work Locations

California

Virginia

Project Transitions



June 2014: Project Start



December 2014: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140499>)

Images

Briefing Chart

A Compact, Wide Area Surveillance
3D Imaging LIDAR Providing UAS
Sense and Avoid Capabilities, Phase
I

(<https://techport.nasa.gov/image/129336>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Organization:

Irvine Sensors Corporation

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

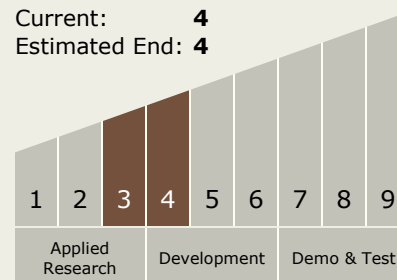
Carlos Torrez

Principal Investigator:

Medhat T Azzazy

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



A Compact, Wide Area Surveillance 3D Imaging LIDAR Providing UAS Sense and Avoid Capabilities, Phase I

Completed Technology Project (2014 - 2014)



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.6 Ground Computing
 - └ TX11.6.4 Quantum Computer

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System